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Five-Year Review Report

First Five-Year Review Report

for Roto-Finish Co. Inc. Site

Portage Kalamazoo County, Michigan

September, 2002

PREPARED BY:

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Superfund Division

Date:

9/24/02

Five-Year Review Report

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List of Acronyms

ARAR Applicable or Relevant and Appropriate Requirement
CD Consent Decree
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
DCA 1,1-Dichloroethane
DCE 1,1-Dichloroethene
EPA United States Environmental Protection Agency
CFR Code of Federal Regulations
FAA Federal Aviation Administration
MCL Maximum Contaminant Level
MDEQ Michigan Department of Environmental Quality
MDNR Michigan Department of Natural Resources
NCP National Contingency Plan
NPL National Priorities List
NTCRA Non-Time Critical Removal Action
O&M Operation and Maintenance
PRP Potentially Responsible Party
RA Remedial Action
RAO Remedial Action Objective
RD Remedial Design
RI/FS Remedial Investigation/Feasibility Study
ROD Record of Decision
SDWA Safe Drinking Water Act
TCA Trichloroethane
TCE Trichloroethene
VAS Vertical Aquifer Sampling
VC Vinyl Chloride
VOC Volatile Organic Compound

Executive Summary

The United States Environmental Protection Agency (U.S. EPA), Region 5, conducted the five-year review of the remedy implemented at the Roto-Finish Co., Inc., Superfund Site in Portage, Michigan. This is the first five-year review for the Roto-Finish Site. The 1997 Record of Decision declared that natural attenuation with monitoring would be used as a means of remediating the plume of contaminated groundwater associated with the site. The five-year review is required due to the fact that although it is intended that hazardous substances, pollutants, or contaminants be brought under control such that unlimited use and unrestricted exposure may occur, natural attenuation will not achieve such remedial goals within a five-year timeframe.

The Roto-Finish site is an inactive manufacturing facility which manufactured specialized equipment to debur and polish metal castings, mechanical parts, and similar objects. Manufacturing operations at the site began in the late 1940s to early 1950s, and continued until 1988 when the business was sold and the facilities were closed. Wastewater from manufacturing and testing processes was discharged to one of three on-site lagoons. These lagoons were located near the eastern edge of the plant property. These lagoons were in service until 1980.

In 1979, the Michigan Department of Environmental Quality (MDEQ), formerly known at the time of initial site sample collection as the Michigan Department of Natural Resources (MDNR), conducted sampling of sediment and water within the wastewater lagoons. From 1979-1984, the Roto-Finish Company, under oversight from MDEQ, performed lagoon excavation plus excavation of visibly stained surface soils. In 1986, the Roto-Finish site was included on the National Priorities List (NPL).

The Remedial Investigation/Feasibility Study indicated that the primary remaining threat at the site is posed by contaminated groundwater, with volatile organic compounds being the primary contaminants of concern. While evaluation of final site remedy was underway, a nontime critical removal action (NTCRA) was begun in 1995. The NTCRA, consisting of two groundwater extraction wells and sanitary sewer discharge, was continued until 2001.

The Record of Decision for the Roto-Finish Site was signed on March 31, 1997. Simultaneously, a Preliminary Close-Out Report was also issued. The selected remedy called for natural attenuation of the contaminated aquifer.

A long-term protectiveness determination of the remedy at the Roto-Finish site cannot be made at this time. Further information will be obtained by taking the following actions: a. Determining the core of the plume of contamination; b. Reevaluating plume configuration; c. Determining if possible a biodegradation rate for the plume of contamination; d. Evaluating downgradient recipient points, pending possible changes in plume directional flow. It is expected that these actions will take approximately 12 months to complete, at which time a long-term protectiveness

determination will be made. For the short-term, the remedy is protective. All immediate threats to human health and the environment have been eliminated.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: Roto-Finish Co., Inc.

EPA ID *(from WasteLAN)*: MID005340088

Region: 5	**State:** Michigan	**City/County:** Portage/Kalamazoo

SITE STATUS

NPL status: Final x Deleted ☐ Other (specify) _____

Remediation status (choose all that apply): ☐ Under Construction Operating x ☐ Complete

Multiple OUs? ☐ YES NO x	**Construction completion date:** _3__ / _31__ / _1997_____

Has site been put into reuse? X☐ YES ☐ NO

REVIEW STATUS

Lead agency: x EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Russell D. Hart

Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA, Region 5

Review period: _9_ / _11_ / _2001_____ to _9_ / _11__ / _2002_____

Date(s) of site inspection: _9__ / 9-10___ / _2002_____

Type of review:

X Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion

Review number: x 1 (first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:

☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____
XX Construction Completion (PCOR) ☐ Previous Five-Year Review Report
☐ Other (specify) _____

Triggering action date *(from WasteLAN)*: __3_ / __31_ / _1997_____

Due date *(five years after triggering action date)*: _3__ / _31__ / _2002_____

["OU" refers to operable unit.]

Five-Year Review Summary Form, cont'd.

Issues: There is a difference of opinion in interpretation of RD phase 2001 field investigation results, with further investigation continuing in 2002. These differences concern orientation of the groundwater plume; do results indicate radial flow components, or a shift in plume direction due to changes in groundwater usage patterns south of the site. One aspect of a natural attenuation remedy in order for the Agency to determine that the remedy is protective, is that plume movement be known and stable.

Recommendations and Follow-up Actions: Further vertical aquifer sampling and piezometer installation is proceeding during 2002. Pending results obtained, U.S. EPA will discuss findings with PRP consultants and/or representatives of potential water users to the south, and will discuss opportunity for further institutional and/or engineering control measures with such parties, as necessary.

Protectiveness Statement(s):

A long-term protectiveness determination of the remedy at the Roto-Finish site cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions: a. Determining the core of the plume of contamination; b. Reevaluating plume configuration; c. Determining if possible a biodegradation rate for the plume of contamination; d. Evaluating possible downgradient recipient points. It is expected that these actions will take approximately 12 months to complete, at which time a protectiveness determination will be made. However, because of past actions to promote clean drinking water supply, U.S. EPA is confident that for the short term the site does not pose human health and environmental problems.

Other Comments:

Five-Year Review Report

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA § 121 and the National Contingency Plan (NCP). CERCLA § 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with Section 104 or 106, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above such levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The United States Environmental Protection Agency (U.S. EPA), Region 5, conducted the five-year review of the remedy implemented at the Roto-Finish Co., Inc., Superfund Site in Portage, Michigan. This review was conducted by the Remedial Project Manager (RPM) for the entire site from September 2001 through September 2002. This report documents the results of the review.

This is the first five-year review for the Roto-Finish Site. The triggering action for this policy review is the declaration of construction completion and initiation of the remedial action on March 31, 1997 as discussed in the Preliminary Close-Out Report (PCOR) that was issued simultaneously with the Record of Decision (ROD). The 1997 ROD declared that natural attenuation with monitoring would be used as a means of remediating the plume of contaminated groundwater associated with the site. The five-year review is required due to the fact that although it is intended that hazardous substances, pollutants, or contaminants be brought under control such that unlimited use and unrestricted exposure may occur, natural attenuation will not achieve such remedial goals within a five-year timeframe.

As of the present time, hazardous substances remain on the Roto-Finish site which preclude unlimited use and unrestricted exposure.

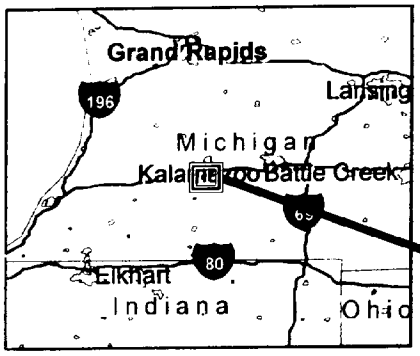
II. Site Chronology

Table 1: Chronology of Site Events

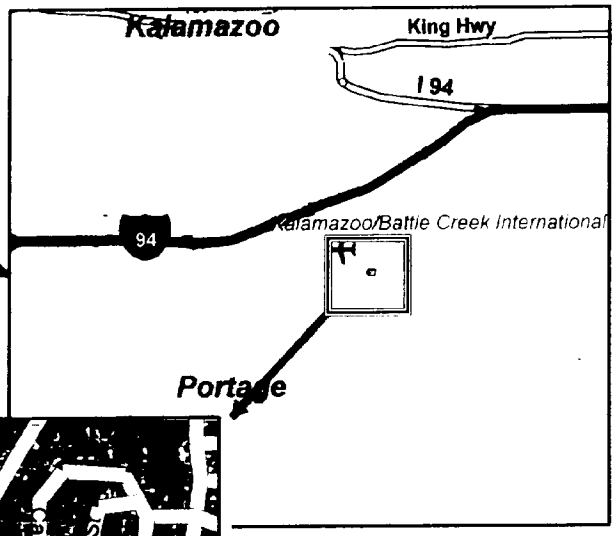
Event	Date
Site manufacturing operations begin. Equipment produced to debur and polish metal castings and parts.	**Late 1940s-early 1950s**
Rest room and lab wastewaters discharged through system of septic tanks, dry wells, and tile field	**To 1980**
Manufacturing and testing process wastewater discharged to three lagoons	**To 1980**
Municipal water supply and sanitary sewer extended to RF facility	**1980**
Sediment and water samples collected from wastewater lagoons by Michigan Department of Environmental Quality (MDEQ)	**1979**
Lagoons and visibly stained soils excavated and disposed in off site landfill	**1979-1984**
RF site placed on National Priorities List (NPL)	**1986**
Remedial Investigation/Feasibility Study (RI/FS) consent agreement signed	**1988**
Public availability session to discuss Superfund process; fact sheet generated; information repository established	**1988**

Roto-Finish Superfund Site
Kalamazoo County, Michigan

1) State



2) Cities of Kalamazoo and Portage



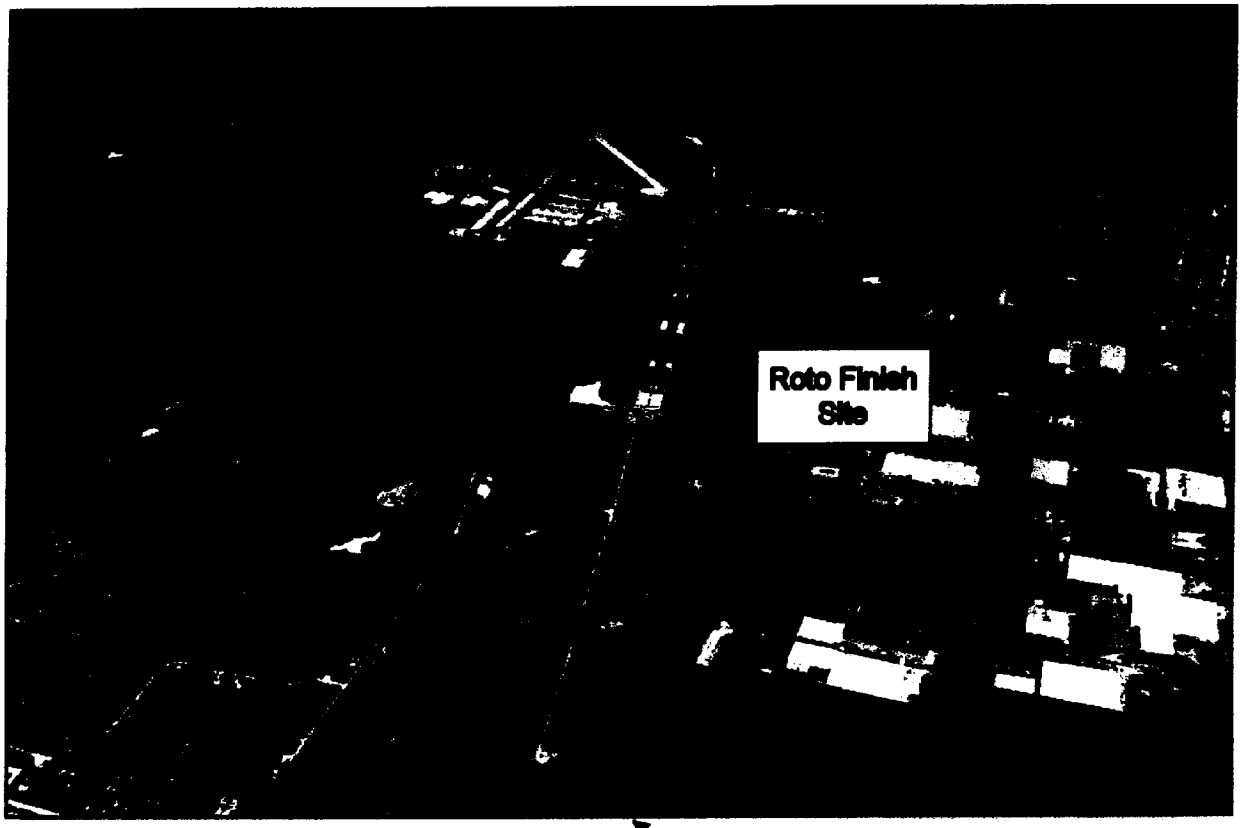
3) Roto-Finish Superfund Site

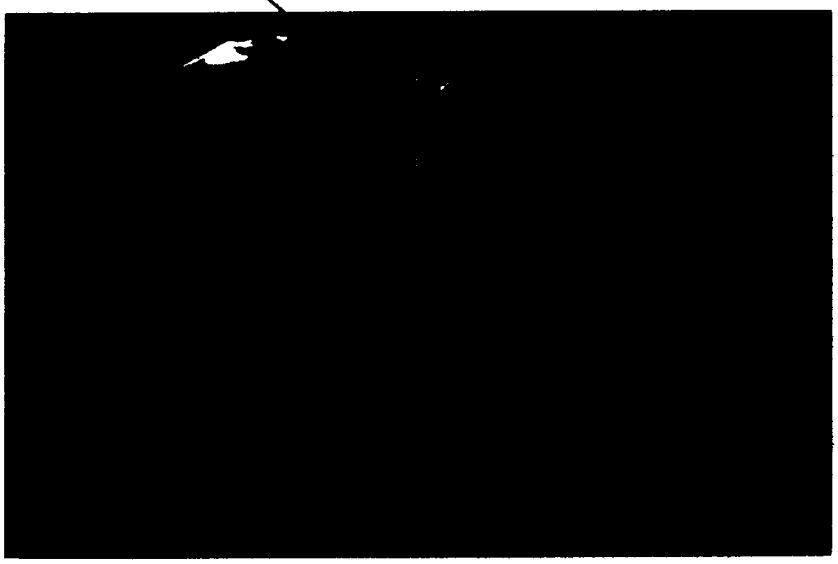
Figure 1

Plot created by David Wilson U S EPA Region 5 on 9/12/2002
Image Date 4/13/1999

EPA

Roto Finish Superfund Site
3D Surface Terrain Model





Elevation

- 911 - 923
- 899 - 911
- 887 - 899
- 875 - 887
- 863 - 875
- 851 - 863
- 839 - 851
- 827 - 839
- 815 - 827

Figure 2

Plot created by David Wilson U.S. EPA Region 5 on 9/11/2002
Image Date: 4/13/1999

Table 1: Chronology of Site Events

Event	Date
Public availability session to discuss findings to date and announce further phase of field work	**1992**
Engineering Evaluation/Cost Analysis (EE/CA) to consider means of managing highest zones of groundwater contamination generated.	**October 1994**
Fact sheet produced summarizing EE/CA. Non-time critical removal action recommended to have two on-site groundwater extraction wells gather most highly contaminated groundwater, and route to Kalamazoo wastewater treatment plant.	**1994**
Action Memorandum to execute EE/CA	**Signed November 1994**
Unilateral Administrative Order (UAO) issued to conduct non-time critical removal action (NTCRA)	**January 1995**
Extraction system installed	**June 1995**
RI/FS completed and released to public Proposed Plan released to public	**October 1996** **October 22, 1996**
Public meeting to discuss RI/FS and proposed plan Preliminary Close-Out Report Record of Decision signed by Region 5 Superfund Five Year Review Site Inspection	**November 13, 1996** **March 31, 1997** **March 31, 1997** **September 9/10, 2002**

III. Background

Physical Characteristics

The Roto-Finish site (see Figure 1) had been an inactive manufacturing facility located at 3700 E. Milham Road in the northeast area of Portage. Michigan. At the time of the September 2002 site inspection, however, a new firm called Esco, Inc. is now occupying the former Roto-Finish manufacturing facility. This firm is engaged in metal fabricating activity. The site covers approximately 7 acres and is located about 0.2 miles west of Sprinkle Road, directly east of the Kalamazoo/Battle creek International Airport (see Figure 2). Rivers and creeks near the site include Olmstead Drain/Davis Creek, located appoximately 0.75 miles northeast of the site, and Portage creek, located about 2 miles northwest of the site.

Site ground surface relief is generally flat, with elevation variations mostly less than 10 feet across the site. Geology near the Roto-Finish site is primarily characterized by thick deposits of glacial outwash materials consisting of stratified sands, silts, and gravels. There is much discontinuous layering and numerous lenses of fine grained drift sediments, such as silts and clays. In the absence of other industrial activity, groundwater flow at the Roto-Finish would generally move to the northwest, toward Davis Creek and Portage Creek, and on a regional basis toward the Kalamazoo River, which is about 4 miles north of the site.

Land and Resource Use

The Roto-Finish Company manufactured specialized equipment to debur and polish metal castings, mechanical parts, and similar objects that required a smooth finish. Manufacturing operations at the site began in the late 1940s to early 1950s, and continued until 1988 when the business was sold and the facilities were closed. Plant operations were conducted in one of two primary areas: the manufacturing building, which provided offices plus shop areas used for equipment manufacturing and storage; and the chip/compound building, which was used for production and storage of polishing media.

The immediate site area is zoned for industrial usage. Other nearby industrial activity includes plastic color pigment production, a building supply business, surgical supply manufacturing, and pharmaceutical research and manufacturing. This latter industrial facility, located to the south of the Roto-Finish site, is a significant user of groundwater.

Both Portage and the nearby city of Kalamazoo obtain municipal water from groundwater. The closest Kalamazoo municipal well is located about 1.3 miles north of the Roto-Finish site. Two Portage wells serve the nearby Lexington Green residential development, about 0.3 miles away. However, these two wells are located northeast of the Roto-Finish site, and are not expected to be influenced by the site groundwater contamination plume's northwest/westerly flow direction. Moreover, these two particular Portage municipal wells have been used only to flush fire hydrants ever since 1989, due to their high iron content.

Prior to extension of municipal water supply, it is estimated there were approximately 90 private residential wells installed in the vicinity of the Roto-Finish site. Although this area is now serviced by municipal water supply, the records do not indicate which former private wells have been disconnected and properly closed so as to prevent further usage. As will be noted in the Interview records for this report, any nearby municipal wells do not seem to have a problem with intake of compounds that could be associated with the Roto-Finish site. However, the Michigan Department of Environmental Quality is attempting to provide information on whether former private wells were closed in a manner which prevents further use. Any such supplemental information will be noted in "milestone" updates to this report.

Contamination History

During the time of plant operation, Roto-Finish used two systems for waste disposal. Wastes from rest rooms and laboratories were routed through a system of septic tanks, dry wells, and a tile field. Wastewater from manufacturing and testing processes was discharged to one of three on-site lagoons. These lagoons were located near the eastern edge of the plant property, along the east and north sides of the chip/compound building. These lagoons were in service until 1980. In 1980, extension of both the municipal sanitary sewer system and municipal water supply was made available to the plant. Roto-Finish connected to these water supply/sewerage service lines.

In 1979, the Michigan Department of Environmental Quality (MDEQ), formerly known at the time of lagoon sample collection as the Michigan Department of Natural Resources (MDNR), conducted sampling of sediment and water within the wastewater lagoons. Elevated levels of heavy metals such as cadmium and chromium were detected.

Initial Response

From 1979-1984, the Roto-Finish Company, under oversight from MDEQ, performed lagoon excavation plus excavation of visibly stained surface soils. Materials thus excavated were taken off-site for subsequent landfill disposal. Excavated areas were backfilled with clean material.

In 1986, the Roto-Finish site was included on the National Priorities List (NPL). From 1987-1988, negotiations were conducted concerning performance of a Remedial Investigation/ Feasibility Study (RI/FS). A Consent Agreement was signed in 1988, indicating the RI/FS would be performed privately, with oversight from the agencies. The RI/FS was conducted in three phases, from 1989-1996.

Basis for Taking Action

After completing the source control initial response to phase out lagoon usage and excavate and remove contaminated soils/sediments, the RI/FS indicated that the primary remaining threat at the site is posed by contaminated groundwater. Hazardous substances that have been released

into site groundwater and exceed either maximum contaminant levels (MCLs) or Michigan Part 201 Residential Drinking Water Criteria include:

Vinyl chloride, 1,1-Dichloroethene, 1,1,1-Trichloroethane, Trichloroethene, 1,1,2-Trichloroethane, Benzene, Tetrachloroethene, Chlorobenzene

(Of more frequently detected inorganic substances, both zinc and manganese also exceeded either the MCL or Michigan Part 201 standard. However, the presence of these inorganics may be due to natural conditions as well as the conduct of past site manufacturing operations.)

The RI/FS effort did not identify any unacceptable degree of current or future cancer or non-cancer risk through exposure to site soils. As discussed, extension of municipal water supply into the site vicinity means that there is no current unacceptable degree of risk to downgradient groundwater users. The RI/FS showed that unacceptable cancer risks would result, however, should a new drinking well be installed within the area of Roto-Finish groundwater impacts. Such risk was calculated to be 2 additional cases of cancer per every 100 individuals exposed for a potential future industrial drinking water scenario, and 5 additional cancer cases per 100 individuals in the case of a residential exposure scenario.

IV. Remedial Actions/Removal Actions

Voluntary Non-Time-Critical Removal Action for Groundwater

In 1994, Illinois Tool Works Inc. (ITW), acting in a capacity as a potentially responsible party (PRP) for the Roto-Finish site, conducted a voluntary Engineering Evaluation/Cost Analysis (EE/CA) to explore removal options that would address the highest areas of groundwater contamination at the site. This non-time-critical removal action, or NTCRA as it came to be called, was intended to function until such time as the overall RI/FS could be completed, and a final site remedy selected and implemented.

The EE/CA was finished in late 1994, and the agency issued a unilateral order in early 1995 calling for execution of the NTCRA. The NTCRA consisted of the installation of two extraction wells and associated piping (see Figure 3) located between site monitoring wells MWA1 and MWA4. At the time, this location represented the area of highest known groundwater contamination. By mid-1995, the NTCRA was installed. Discharge of extracted groundwater was directed to the Kalamazoo wastewater treatment plant.

Most recent operating data indicated that extraction well one (EW-1) usually ran at an extraction rate of approximately 37-40 gallons per minute (gpm). Extraction well two (EW-2) often functioned at an extraction rate of 41-43 gpm. As will be discussed further in this report, in July 2001 the NTCRA was shut down. This was done in order to allow the aquifer to return to a state of equilibrium such that information could be gathered to explore degradation that could be

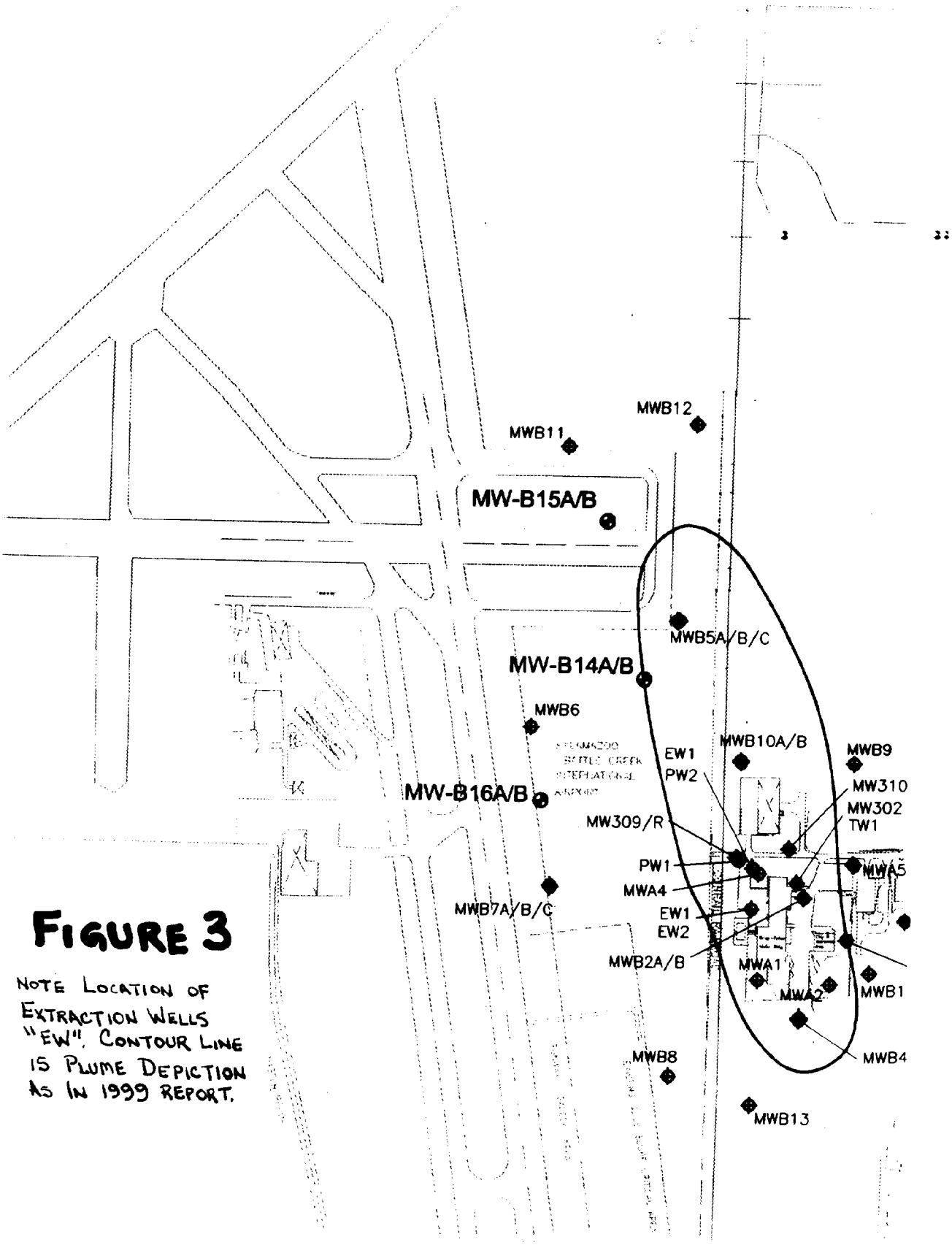


FIGURE 3

NOTE LOCATION OF EXTRACTION WELLS "EW". CONTOUR LINE IS PLUME DEPICTION AS IN 1999 REPORT.

expected as part of a natural attenuation with monitoring remedy.

Remedy Selection

The ROD for the Roto-Finish Site was signed on March 31, 1997. Simultaneously, a PCOR was also issued for the site. Remedial Action Objectives (RAOs) were developed as a result of data collected during the RI to aid in the development and screening of remedial alternatives to be considered for the ROD. The selected remedy called for natural attenuation of the contaminated aquifer to the lower of either maximum contaminant levels (MCLs) or Michigan Act 451 Part 201 Generic Residential Drinking Water Criteria, plus monitoring programs to track progress and effectiveness of natural attenuation. Components installed as part of the NTCRA are to be kept in working order as part of any contingency remedy needed to be implemented in case the actual rate of biodegradation is not sufficient to attain site goals, or in case of changing land or groundwater usage patterns that would bring into question the protectiveness of the remedy. Possible modification to monitoring and/or institutional controls are also part of contingency remedy. As was discussed in Section III of this report in "Basis for Taking Action", primary risks associated with the site are through groundwater contaminants. Therefore, site RAOs focus on groundwater management. RAOs include:

Management of Migration Response Objectives

1. Eliminate or minimize the threat posed to human health and the environment by preventing exposure to groundwater contaminants;

2. Restore contaminated groundwater to Federal and State applicable or relevant and appropriate requirements (ARARs), including drinking water standards, and to a level that is protective of human health and the environment within a reasonable period of time; and

3. Control further migration of groundwater contamination beyond its current extent such that potential receptors are not unduly exposed to excessive contaminant levels (see Figure 4).

Major components of the ROD which deal with management of groundwater migration include:

1. Usage of natural processes to restore the groundwater to values as established by the ARARs throughout the aquifer. The primary attenuation process at the Roto-Finish site is expected to be intrinsic biodegradation.

2. Employment of a contingency remedy, consisting of re-starting the NTCRA with allowance for adding on to that system as necessary, should ROD assumptions about expected restoration timeframes, potential risks to users, groundwater use or direction, or findings of intrinsic biodegradation encounter significant adverse new findings.

3. Forms of institutional control in assuming that the adjacent operations of the Kalamazoo/Battle Creek International Airport will continue to curtail land use and opportunity

for drinking water well installation downgradient of the site. Supplementing such control is a local ordinance of Kalamazoo County which requires issuance of a groundwater well permit before installation of any new drinking water well in an area of environmental degradation. The ROD also allows for implementation of additional institutional controls such as deed restrictions, deed notices, and/or deed covenants should such items be feasible and necessary to provide additional assurance of action taken to preclude undue exposure to groundwater contaminants while the process of natural attenuation is underway.

4. Implementation of a long-term groundwater monitoring program designed to track horizontal and vertical extent of the contaminated groundwater plume boundaries, monitor changes in chemical constituents and concentrations, and collect data to confirm that intrinsic biodegradation is occurring. Such monitoring program will consist of existing and new monitoring wells, and will attempt to examine any expansion of the plume toward new or existing water supply wells.

5. Contingency planning to be developed as needed to respond to adverse differences in the actual performance of the natural attenuation alternative and actual site conditions, compared to expected performance and expected site conditions.

Remedy Implementation

A work plan, field sampling plan, and quality assurance project plan were developed to guide conduct of remedial design necessary for further remedy implementation. Field work for the remedial design began in July 2001, with the shutting down of the NTCRA. This step was needed in order for the aquifer to return to a certain state of equilibrium for both hydraulic and biogeochemical purposes. (With large groundwater usage going on at the Pharmacia plant to the south of the site, the Roto-Finish aquifer may not be totally in a "natural" state, but the degree of equilibrium attained with NTCRA shutdown is sufficient for remedial design purposes).

The remedial design step sought to explore several questions created in part by past site observations, but which also arose as the Region worked with guidance documents prepared to deal with natural attenuation matters. These topics included items such as:

- Observation of groundwater monitoring network data seemed to show a reduction in contaminant levels as the RI proceeded through its phases. While potential risk was still presented and ARARs exceeded, certain monitoring points that had shown total volatile organic contaminant (VOCs) levels in the thousands of parts per billion in the late 1980s/early 1990s had dropped to several hundred parts per billion by the time of the ROD and NTCRA operation. Was such change due to naturally occurring biodegradation taking place with the cessation of any new contaminant sources into the aquifer? Would contaminant levels remain lower, or show a rebound after stopping the NTCRA? Were the changes due more to dispersion and migration, or to actual degradation?

- When a groundwater remedy invokes extraction and treatment, or active in-situ steps to

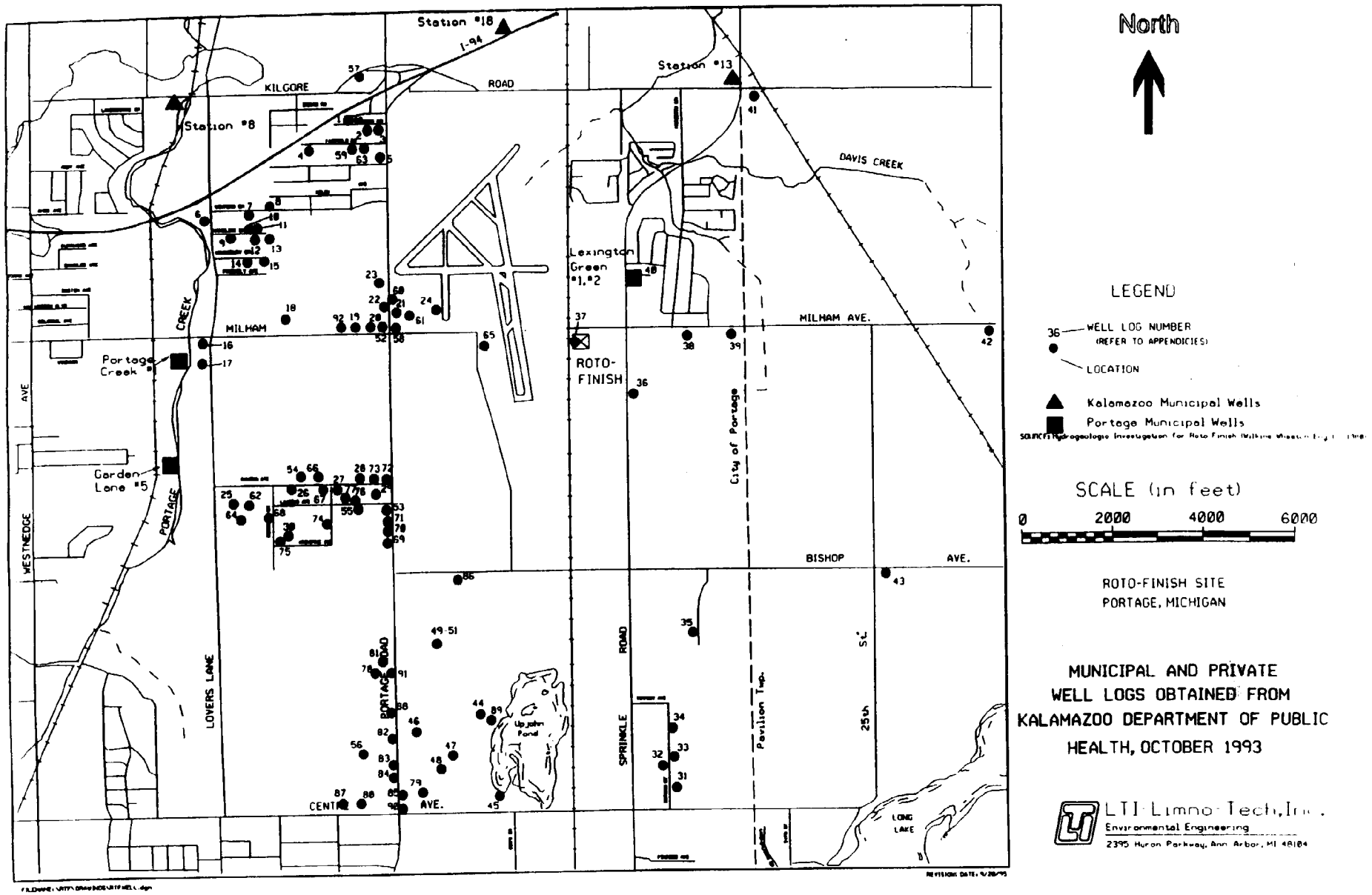


Figure 4 - Municipal and Private Wells

promote and enhance degradation at key passage points, there may be less need for concern regarding total definition of the contaminated portion of the aquifer. However, if a remedy relies on natural attenuation, and only considers other treatment steps on a contingency basis, then guidance suggests it is more important to fully understand both the vertical and lateral extent of contamination. Failure to gather such information could lead to some portion of the contaminated zone possibly causing an exposure threat. Hence, a goal of remedial design was to more fully understand vertical and lateral extent of contamination. RI results indicated a strong downward gradient in the aquifer that required more exploration. The large pharmaceutical plant operating to the south of the site, through its groundwater usage, may have been causing a distortion in the normal northwest direction of flow predicted for the Roto-Finish aquifer. Was a more westerly flow component to the aquifer being introduced, and if so, to what extent?

- While the drop in overall VOC levels in portions of the site groundwater monitoring network seemed promising in terms of an indication that natural degradation was going on, would design reveal the presence of compounds that might be logical breakdown products of site contaminants? If so, this would buttress the case that natural attenuation could achieve the ARARs levels desired in the 50-60 year time period suggested as acceptable by the ROD. However, if the rate of degradation was found to be longer than this time period, should certain contingency actions contemplated by the ROD be implemented? Also, would different degradation rates be found for different zones or depths within the aquifer, and how do these correspond with most heavily contaminated aquifer zones, or predicted movement patterns of most heavily contaminated zones?

- Would design reveal the movement of contaminated portions of the site aquifer onto any but the easternmost areas of the Kalamazoo/Battle Creek Airport? Would there be any reason to implement any more formal institutional controls as a means of preventing exposure to contaminants while biodegradation proceeds, other than relying on the County ordinance (noted in item #3 of major ROD components, above) and the presence of the Airport? What design findings should be relayed to these units, and what if any requests made of them to aid in remedy implementation?

Phase I Design Investigation

After the cessation of groundwater extraction with the curtailing of the NTCRA described above, Phase I design investigation began. Prior to collection of samples to gather further information on water quality within the existing groundwater monitoring network, and to further explore locations west of Roto-Finish on airport property, measurements were made to determine if the aquifer had returned to some semblance of equilibrium.

The first measure of equilibrium was with regard to aquifer hydraulic equilibrium. Manual measurements of groundwater levels were initiated on June 26, 2001. Further measurements were taken on July 5 and July 16, immediately prior to curtailing the NTCRA later in the day on July 16. With the NTCRA shut off, further water level measurements were made at intervals of 10, 14, 21, 28, and 35 days following system curtailment. The principle here is that since long

term remedy calls for natural attenuation, it is better to evaluate the aquifer once a degree of "natural" flow equilibrium has been restored with the curtailment of the NTCRA, since this would more closely approximate conditions under which the remedy is to function.

Measurement results are discussed in Section 2 of the "Phase I Report", as prepared and distributed in April 2002 by Harding ESE, consultant for ITW. With specific reference to Figures 2-7 through 2-9 of the Phase I Report, aquifer response to the cessation of extraction was rapidly observed, and hydraulic equilibrium was established relatively quickly.

However, it was also important to attempt further evaluation of the aquifer once geochemical equilibrium was established, as well as hydraulic equilibrium. To help measure this condition, the parameters temperature, pH, specific conductance, oxidation-reduction potential (ORP), and dissolved oxygen were monitored and recorded in four site monitoring wells. These evaluations are described in further detail in Section 3 of the Phase I Report. Ideally, one might like to see parameter values approaching some common ground, however interpretation of the geochemical parameters was not so clear cut as hydraulic equilibrium measurements.

Past Plume Depictions/ Current Study

As recently as 1999, in a document prepared for ITW by consultant ARCADIS Geraghty & Miller, Inc., and entitled "Technical Memorandum: Review of Natural Attenuation Processes in Groundwater and Recommendations for Future Work", the Roto-Finish groundwater plume of contamination is depicted as a somewhat elongated oval showing general plume movement to the northwest. In the 1999 work, ARCADIS recommended that monitoring wells MWB11 and MWB12 could serve as sentry wells, to mark the perceived ending of the plume. In examining the perceived western edge of the plume of contamination as depicted in the ARCADIS memorandum, the reader will note a lack of monitoring wells in this area. Furthermore, there was some concern that aquifer conditions at Roto-Finish were such that a downward gradient might be expected in aquifer flow. The two extraction wells serving the NTCRA have a midscreen elevation approximately 90' below their casing top elevations. Was it possible that some significant portion of plume contamination might lie below 90', at depths which could be below the influence of the NTCRA system? (See Figures 5 and 6)

Vertical Aquifer Sampling

The reader is referred to Figure 5. Note that the six locations denoted as VP1-VP-6, running northwest to southeast, closely approximate the suspected western edge of the plume of contamination as depicted in the 1999 ARCADIS memorandum. These vertical aquifer sampling locations were to explore contaminants found beginning at the 90' below ground surface depth range, and continue down in increments until at least 170'. Per the work plan governing the Phase I investigation, if contaminants were found at the 170' depth, sampling was to continue in increments until concentration levels dissipated below agreed upon levels for specific contaminants of concern. Similarly, if excessive contamination was found at the 90' depth, sampling in increments above was to continue until contaminants dissipated.

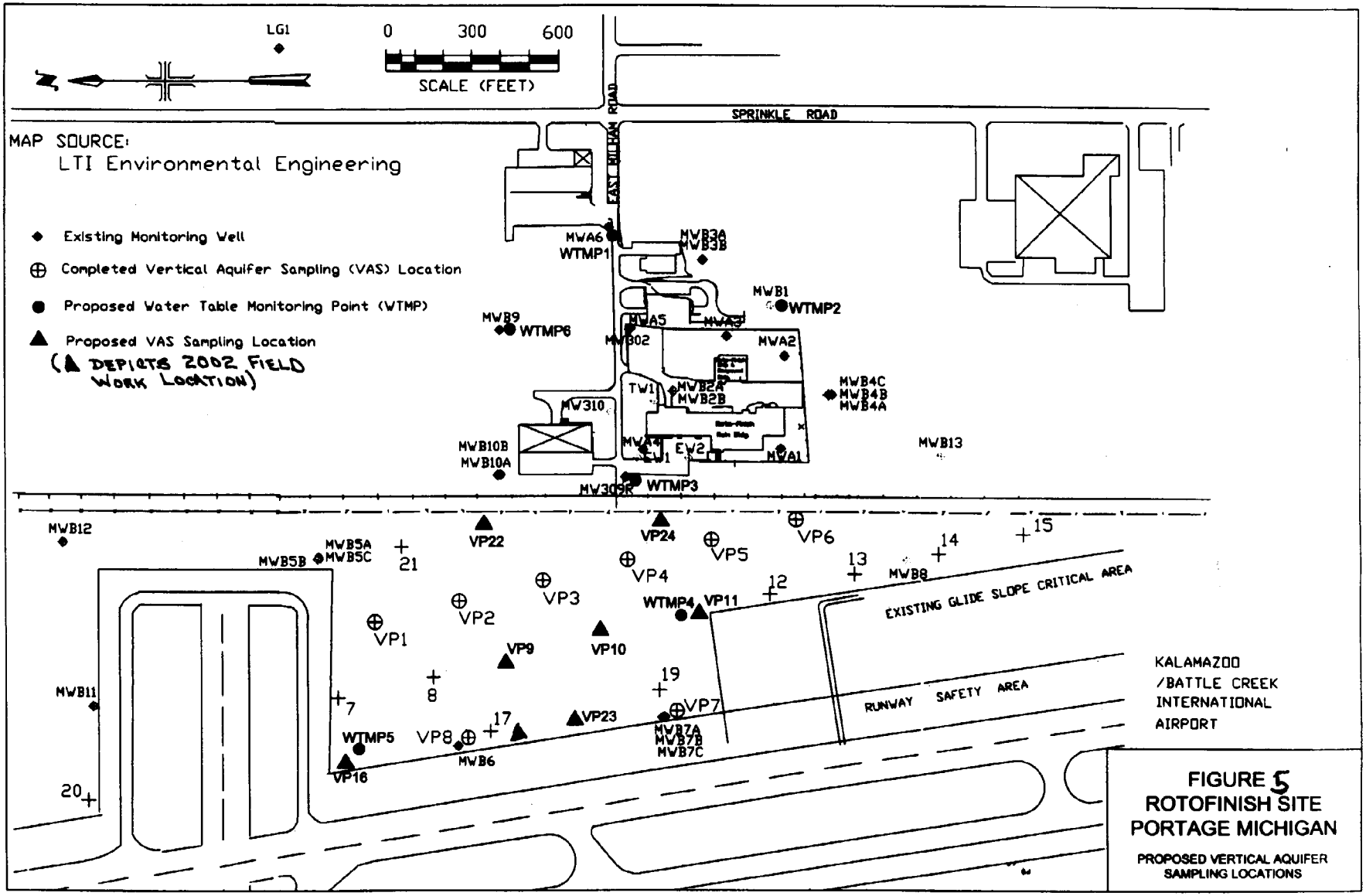


FIGURE 5
ROTOFINISH SITE
PORTAGE MICHIGAN

PROPOSED VERTICAL AQUIFER SAMPLING LOCATIONS

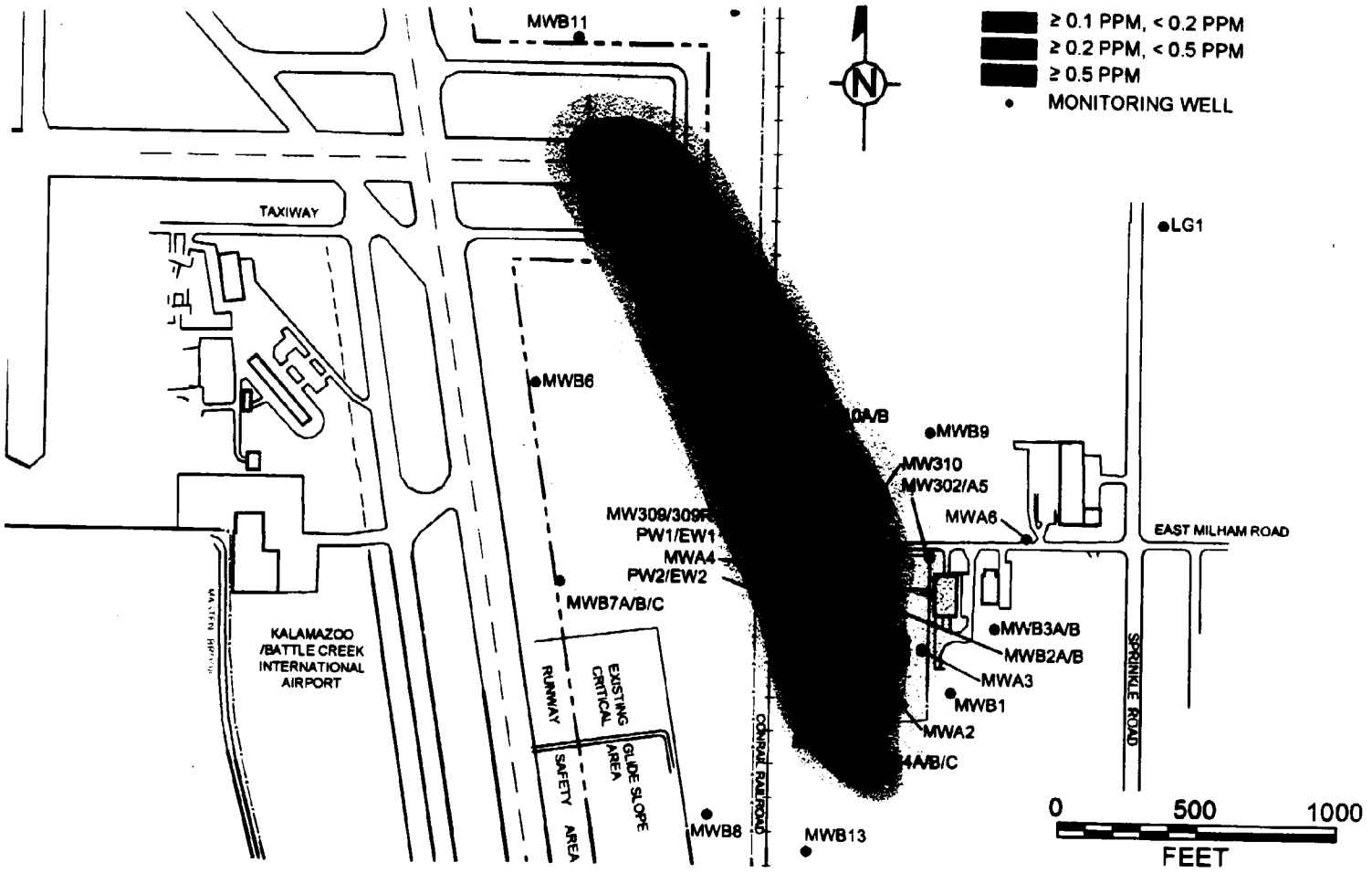


Figure 6

Distribution of VOC Concentrations in Groundwater, NTCRA Monitoring Wells, April 1995

Roto-Finish Site, Portage Michigan

AR

VAS work began in August 2001 after hydraulic equilibrium had been attained. Initially, the technique of cone penetrometer was used in an attempt to chart the aquifer for information on resistance, electrical conductivity, pore pressure, etc., with information derived examined to see if adjustment should be made to a 10' sampling interval. However, the Roto-Finish site contains interspersed layers of particularly hard sand lenses. Only at locations VP-2, VP-3, and VP-6 was there penetration to below the 90' level using cone penetrometer technology. Hence, this technique was abandoned, and a second drilling firm brought onto the site employing the contingency technique foreseen by the work plan, rotosonic drilling. Rotosonic rigs were employed at the site from September-December 2001. More detailed information concerning test boring records may be found in the Phase I Report in the Figures section - in particular those in the series denoted as Figure 5.

Vertical Aquifer Sampling Results

For more detailed results, please see Tables 5-1 through 5-8 of the Phase I report. Highlights are:

VP-1
Compared to the cleanup objective for trichloroethene (TCE) of 5 ug/l, TCE occurred at concentrations of 13, 16, and 5.4 ug/l in the depth range 100/110/120', respectively.

VP-2
Compared to the cleanup objective for vinyl chloride (VC) of 2 ug/l, VC occurred at concentrations of 45, 8.9, 15, 3.3, and 4.7 ug/l at depths of 110/170/180/200/210', respectively. TCE occurred at a concentration of 38 ug/l at a depth of 99'.

VP-3

Compared to the cleanup objective for 1,1-dichloroethene (1,1-DCE) of 7 ug/l, 1,1-DCE occurred at concentrations of 24, 27, 16, 7.8, 9.3, 11, 13, and 11 ug/l at depths of 83/100/106/110/115/120/130/140', respectively. Compared to the cleanup objective of 2 ug/l for VC, VC occurred at concentrations of 5.4, 10, 5.2, 8.0, and 2.7 ug/l at depths of 120/130/140/148/172', respectively. Compared to the cleanup objective for TCE of 5 ug/l, TCE occurred at concentrations of 23, 12, 40, 33, 15, and 12 ug/l at depths of 100/106/110/115/120/130', respectively.

VP-4

Compared to the cleanup objective for VC of 2 ug/l, VC occurred at concentrations of 14, 11, and 6.9 ug/l at depths of 110/130/140', respectively. Compared to the cleanup objective for 1,1-DCE of 7 ug/l, 1,1-DCE occurred at concentrations of 7.5, 16, 96, 54, 80, 120, 46, and 19 ug/l at depths of 70/80/90/100/110/120/130/140', respectively. Compared to the cleanup objective of 5 ug/l for TCE, TCE occurred at concentrations of 6, 34, 41, 7.1, 32 and 21 ug/l at depths of 80/90/100/110140/150', respectively.

VP-5

Compared to the VC cleanup objective of 2 ug/l, VC occurred at 3 ug/l at a depth of 90'. Compared to the cleanup objective of 7 ug/l, 1,1-DCE occurred at 18 ug/l at a depth of 90'.

VP-6

No apparent exceedances of cleanup objectives occurred at VP-6.

Installation of Vertical Aquifer Sampling Points VP-7 and VP-8

With at least preliminary field results known for points VP-1 through VP-6, the two "middle" points, VP-3 and VP-4, were shown to have highest concentrations. This suggested a possible westerly flow component. Existing monitoring wells MW-B6 and MW-B7, just to the east of the main north/south airport runway, had acted much like "sentry" wells MW-B11 and MW-B12, except with a westerly rather than northerly location. Nothing of consequence had been revealed previously at MW-B6 or MW-B7. A study goal was to find the core of the plume, as well as the end of the plume, in order to be able to calculate a biodegradation rate for the plume. Vertical aquifer sampling was in the immediate vicinity of wells MW-B6 and MW-B7, with the VAS points designated as VP-7 and VP-8, respectively.

VP-7

Compared to the VC cleanup objective of 2 ug/l, VC occurred at 3.4, 7, 13, and 2.3 ug/l at depths of 110/120/130/140', respectively. Compared to the 1,1-DCE cleanup objective of 7 ug/l, 1,1-DCE occurred at 14, 26, 77, 68, and 49 ug/l at depths of 90/100/110/120/130', respectively. Compared to the cleanup objective of 70 ug/l for cis 1,2-dichloroethene (c-1,2-DCE), c-1,2-DCE occurred at a concentration of 81 ug/l at a depth of 120'.

VP-8

Compared to the VC cleanup objective of 2 ug/l, VC occurred at 3.5, 3.8, 4.6, and 2.4 ug/l at depths of 130/140/150160', respectively. Compared to the 1,1-DCE cleanup objective of 7 ug/l, 1,1-DCE occurred at a concentration of 8 ug/l at a depth of 120'.

Interpretation/Discussion

VAS points VP-7 and VP-8 represented the approximate western-most limits of where Harding ESE had been able to negotiate airport access for drilling and investigative purposes. A possible implication of data gathered at VP-7 and VP-8 is that the plume of contamination may have moved to the west side of the main north/south airport runway. Harding ESE conducted further access negotiations. However, in a letter dated June 24, 2002, Harding ESE informed U.S. EPA that Federal Aviation Administration (FAA) denied access for any drilling operation which would have a drill rig mast height of sixteen feet or greater. This effectively eliminates use of

rotosonic and auger drilling techniques in new access areas. Since there is some distance between VP-7 and VP-8, there is the possibility that there may exist a point, somewhat akin to the VP-3 and VP-4 locations, where plume concentrations are higher than at either VP-7 or VP-8. The reviewing agencies have suggested that this distance between VP-7 and VP-8 be further investigated with two other VAS sampling locations in an effort to better define the core of the plume for this plume component. This work still appears possible.

However, given the restriction imposed by the FAA, it may no longer be possible to completely define the plume of contamination. As interview notes later in this report indicate, the reviewing agencies have attempted to determine if possible downgradient water intake wells have experienced any intake problems with chlorinated VOCs such as occur at the Roto-Finish site. Initial results for municipal wells do not indicate such a problem, however further followup must occur.

In interpreting the Phase I Report, while the reviewing agencies had other comments concerning proper usage of data in creating piezometric surface or chemical contour maps, a significant area of difference of opinion between the reviewing agencies and Harding ESE was with regard to the relative influence of pharmaceutical firm water intake wells located to the south of the site, and their influence on plume configuration. Harding ESE's interpretation is that increased intake rates at this southerly location have pulled the Roto-Finish plume, formerly depicted as a relatively narrow oval moving to the northwest, to a plume with a predominant southwesterly flow. The reader may wish to refer to Figures 2-15/2-19 in the Phase I report for more information on water levels after the cessation of the NTCRA. The reviewing agencies believe that a case can be made for a more radial flow pattern all along, and that there may be components of flow to the northwest, west, and southwest. Agency comment concerning the Phase I Report is provided in a June 19, 2002 letter to Harding ESE.

Biotic Degradation

While there are other literature sources which describe these processes, one useful element within the 1999 ARCADIS Technical Memorandum within Section 4 of that document is the brief discussion of attenuation of chlorinated VOCs. The reader is reminded that there are several attenuation mechanisms, consisting of physical and biological processes, which may contribute to changes in contaminant phase or concentration. Physical, non-destructive attenuation mechanisms consist of such processes as dispersion, adsorption, and volatilization. Destructive transformation pathways may occur abiotically in limited cases - the reference cites trichloroethane undergoing abiotic chemical change to acetic acid. However, the case of most interest concerns biotic degradation of chlorinated ethanes and ethenes. The Technical Memorandum predicts a biotic degradation sequence for trichloroethene (TCE) as follows:

trichloroethene (yields) dichloroethene (yields) vinyl chloride (yields) ethene (yields) ethane (yields) carbon dioxide and water

On page 16, the ARCADIS memorandum notes in part: "...The more highly chlorinated compounds are most susceptible to reductive dechlorination because of their higher state of oxidation... Consequently, the later steps of this process, such as degradation of cis- 1,2 DCE to VC, and degradation of VC to ethene, generally require more strongly reducing conditions in groundwater than do the initial degradation steps. Often a groundwater environment is not reducing enough... to allow for complete degradation to occur and an accumulation of daughter products is observed (such as an accumulation of cis-1,2 DCE or VC). As a result, the oxidation-reduction potential (ORP or redox) of the groundwater system is dependent on, and can influence, the specific reductive dechlorination processes..."

In taking a brief look at a subset of sampling results, one notes more frequent occurrence of TCE and DCE at VP-3 and VP-4, whereas at VP-7 and VP-8 VC occurred more frequently with one occurrence of DCE and cis- 1,2-DCE. Hence, assuming that at this particular portion of the plume, the flow component is westerly, breakdown and degradation products occur more frequently in the downgradient direction. What we do not know is a proven extent of plume migration.

Significance of the VP-3/VP-4 "Bulge"

Had the VP-1 through VP-6 series of sampling points revealed little in the way MCL exceedances, a case could have been made for sufficient plume definition so as to begin the process of biodegradation rate calculation. However, the presence of the findings at VP-3 and VP-4, coupled with contaminant findings at VP-7 and VP-8 suggest:

- that previous depictions of westerly components of the plume were not accurate

- that the limits of the plume to the west and southwest are not known

- that the depths at which the contaminants occurred, largely at depths greater than 90' below the ground surface, suggest that the NTCRA extraction system was not efficiently capturing contaminants at depth

Transmissivity Reduction

In the interview section of this report, the reader will note discussion items with the reviewing agency inquiring as to which consulting firm is charged with operation and maintenance of the site monitoring well network. The need to consider this matter arises from discussion in Section 4 of the Phase I Report which states in part: "...Table 4-1 includes the transmissivity results obtained from eight observation wells during pump tests conducted in September 1992 as part of the RI investigation. In six of the eight wells, the transmissivity values estimated from the October 2001 slug test conductivity values... were lower than that reported for the 1992 aquifer pump testing... The difference between the transmissivity values obtained in 1992 and 2001 is attributed to a combination of screen fouling over the 9 years since the earlier aquifer test was

conducted and the inherent difference in the volume of the aquifer evaluated by the two methods..."

Hence, this suggests to the reviewing agency that it is appropriate to plan for such activity as well redevelopment in the near future. Comparison of VAS results with older wells may also help determine if there is any need for concern about biofouling of older well screens.

Field Work For 2002

Despite the drill rig height restriction imposed, which may prevent detecting the leading edge of the plume of contamination, field work is progressing at the site. This work consists of additional vertical aquifer sampling to the east of the main airport north-south runway, and further piezometer installation. This shows a line of three vertical aquifer sampling investigation points running about parallel to and midway the lines established by VP2/VP3/VP4, and VP8/VP7. Two additional VAS locations are being established in the approximately 800' distance between VP7 and VP8. Two more VAS locations are being installed at the Roto-Finish west fence line, east of VP2/VP3/VP4. In general terms, the new VAS monitoring points are located about 300' apart in a vertical/horizontal fashion. Six additional piezometers are being installed. Three of these will be associated with the new VAS sampling locations. Three more are being located in the central portion of the former Roto-Finish production facility.

These installations are expected to be completed by about mid-fall 2002. Sampling results and elevation measurements may be tabulated and available by around the end of 2002.

When available, results will be evaluated. The reviewing agencies hope that this latest field effort will yield pertinent information about the core of the plume of contamination. Upon such evaluation, the reviewing agencies will discuss with technical consultants for the PRP whether there is sufficient information to reasonably depict the plume and enable calculation of biodegradation rate(s) associated with the plume. If this is possible, U.S. EPA may be able to make a more definitive statement as to protectiveness of the remedy. If after evaluation of 2002 field results the plume is not reasonably depicted, then the parties will consider either what other field work that could be performed in the first half of 2003 might be advisable, or consider what remedy contingencies and/or additional work may need to be invoked if too much doubt remains as to the remedy's protectiveness. If a significant case can be made that the plume direction is in fact being altered to a more pronounced southwesterly flow, then U.S. EPA believes it is appropriate to discuss such findings with potential groundwater users in this direction.

Such evaluations will be summarized in a "milestone" report projected to be available within one year of development of this Five Year Review Report.

Progress Since the Last Review

This report constitutes the first Five Year Review report developed for this site.

VI. Five-Year Review Process

Community Notification and Involvement

U.S. EPA informed the community via public announcement (see insert) that a Five-Year Review Report compilation effort had commenced for the Roto-Finish site. The notice issued described key elements of the remedy as stated in the 1997 ROD, noted key design issues, and provided contacts for further information. The notice invited comment submittal; however to date no comments have been received.

U.S. EPA has also sent correspondence to representatives of ITW, Inc., informing them of the Five-Year Review Report development effort. It is important that such a key PRP be kept informed of report developments, since any key recommendations would need to be coordinated with such party.

VII. Technical Assessment

- *Question A: Is the remedy functioning as intended by the decision documents?*

Qualitatively, one sees evidence of projected breakdown products as the contaminated groundwater moves downgradient. However, in order to provide a positive declaration that a natural attenuation remedy is functioning so as to be fully protective of human health and the environment, one need to be able to reasonably depict the plume of contamination, and to assert quantitatively with some confidence that no potential downgradient groundwater user would be adversely exposed in some reasonable time period. One obvious finding of the 2001 field work is that the plume has components that have moved farther west than previously depicted. Given the limitation imposed by the Federal Aviation Administration on allowable drill rig height to the west of the main runway, we cannot say at this time precisely where the plume of contamination ends. Hopefully, 2002 field work will yield sufficient new information such that the core of the plume of contamination will be better defined, and that an approximation of biodegradation rate(s) will be possible. The "milestone" supplement will attempt to address this matter.

- *Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?*

The 1997 ROD incorrectly attributed an MCL to 1,1-dichloroethane (DCA). Actually, MCL consideration for this compound is still under review. This compound is one of those slated for further water quality standard development, and in the field has been detected more frequently than any other VOC. Also, the 1997 ROD inappropriately added together the separate MCLs for the cis/trans forms of 1,2 - DCE, rather than noting their individual MCLs. Despite these oversights, basic assumptions concerning exposure, toxicity, and desired cleanup levels are justified. The agency must monitor developments related to any eventual MCL that may be established for 1,1- DCA. However, at this time, the original remedial approach is still likely to be able to be compatible with MCL development which may occur for 1,1- DCA.

- *Question C: Has any other information come to light that could call into question the protectiveness of the remedy?*

At this time, there is difference of opinion between the reviewing agencies and technical consultants representing the site PRP concerning plume depiction and fate. The agencies believe a case can be made for somewhat radial flow depiction, with some vectors extending to the northwest, west , and southwest. The PRP's consultant reasons that the southwest flow component may be especially strong - strong enough that the ultimate fate of the plume may be movement to the intake wells of the pharmaceutical company located about a mile to the southwest of the Roto-Finish site. Hopefully, 2002 field work, now being conducted, will help provide more information on this matter. If a significant case can be made that the plume direction is in fact being altered to a more pronounced southwesterly flow, then U.S. EPA believes it is appropriate to discuss such findings with potential groundwater users in this direction.

The 1997 ROD had the contingency of reactivating the two NTCRA extraction wells should difficulty arise with the basic natural attenuation approach. However, from what was learned in the 2001 field work, a case could be made that these two wells, drawing mainly from a depth of about 80' below ground surface, do not perform a particularly efficient job in capturing site contaminants. Instead, 2001 field results indicated that most of the new westerly contaminant findings were at depths often of 120-140'. Hence, if a contingency did need to be invoked, the NTCRA may need to be supplemented by one or two additional extraction wells located farther west and drawing from a greater depth. Arguably, such an addition to the contingency may require ROD amendment development, and a possible retraction of the previous PCOR if such amendment actually requires development.

Another possible scenario could develop in which development of new engineered treatment facilities is not necessary. If a convincing case developed concerning a pivoting of the groundwater plume to a more southwesterly direction, it would seem to be in the interests of all parties to explore expected water usage patterns by industr(ies) located in that direction, and examine further what might be anticipated in terms of possible water conservation measures, when and with what concentration contaminants from the Roto-

Finish plume might arrive at such industries, and whether such industry may have existing groundwater treatment devices, such as stripping towers for internal cooling water usage, that might be compatible with Roto-Finish contaminants. If this were the case, it is conceivable that rather than demand that the Roto-Finish PRP expand and build capital facilities to cope with new movement of the plume, that perhaps the private parties might reach some mutually acceptable agreement calling for some form of reimbursement/O & M. Another possibility is that industrial entities to the south might be able to invoke water conservation measures which would allow the plume to revert to previously conceived flow patterns, which may be more compatible with natural attenuation.

Another item which requires further consideration was a finding from the 2001 field work, and which has been noted in the attached interview records. This concerns the subject of loss of groundwater monitoring well transmissivity. A case can be made for development of an operation and maintenance plan for this site, which would discuss needed redevelopment at key wells that may be part of a more permanent monitoring network which must be developed as part of site remedial action. There could be several reasons for loss of well transmissivity over the years. A worst-case scenario would be if some sort of biofouling around the well screen is occurring, and that this jeopardizes not only transmissivity but also samples collected from the well. A significant case of biofouling could yield artificially low contaminant results, and cast doubt on an apparent trend of significantly lower site contaminant results over the years. Comparison of VAS results with older wells may also help determine if there is any need for concern about biofouling of older well screens. A round of sampling of all site wells is projected to be collected in September 2002

VIII. Issues

Such issues were discussed in large part in Question C above. Highlights are summarized below.

Table 2: Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
lack of plume depiction	N	Y
lack of projection of a biodegradation rate for the groundwater plume lack of an operation and maintenance plan with allowance for necessary monitoring well redevelopment is necessary apparent lack of capture efficiency of the previous NTCRA	N	Y

IX. Recommendations and Follow-up Actions

Results forthcoming from 2002 field work need to be carefully evaluated. Better definition of the plume core may yield sufficient information to enable calculation of plume biodegradation rate. The reviewing agencies will review with PRP technical consultants what if any further steps need to be taken to depict the contaminant plume as accurately as possible. An operations and maintenance plan that will consider well redevelopment needs should be prepared. Pending strength of case developed for greater movement of the plume towards southwesterly groundwater users, discussions between such U.S. EPA, Roto-Finish PRP representatives, and such groundwater users may be advisable. Further, there must be established, as called for in the ROD, development of a long-term groundwater monitoring program designed to track horizontal and vertical extent of the contaminated groundwater plume boundaries, and monitor changes in chemical constituents and concentrations. All these steps need to be considered before issuing a "milestone" supplemental update report by September 2003.

X. Protectiveness Statement

Long-Term Protectiveness Determination Deferred:

A long-term protectiveness determination of the remedy at the Roto-Finish site cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions: a. Determining the core of the plume of contamination; b. Reevaluating plume configuration; c. Determining if possible a biodegradation rate for the plume of contamination; d. Evaluating possible downgradient recipient points. It is expected that these actions will take approximately 12 months to complete, at which time a protectiveness determination will be made. However, because of past actions to promote clean drinking water supply, U.S. EPA is confident that for the short term the site does not pose human health and environmental problems.

XI. Next Review

Certain data gaps discussed earlier in this report prevent the rendering of a definitive statement as to the overall protectiveness of the natural attenuation approach to groundwater management at the Roto-Finish site at this time. Therefore, U.S. EPA expects to issue a supplemental "milestone" report within one year of this report which will provide an update on the degree of

success in closing these data gaps, and what effect this supplemental information may have on protectiveness determination. Within no more than four years following development of the supplemental milestone report, U.S. EPA foresees issuing another complete five year review report by September 2007.

REFERENCE MATERIALS

- 1997 Record of Decision

- Technical Memorandum: Review of Natural Attenuation Processes in Groundwater and Recommendations for Future Work Roto-Finish Site November 1999 Prepared for ITW, Inc. by ARCADIS Geraghty & Miller, Inc.

- Remedial Design Work Plan/Field Sampling Plan/Quality Assurance Plan - Developed approximately December 2000/February 2001/April 2001, respectively

- Phase I Report and Appendices - Roto-Finish Site Prepared for ITW, Inc. By Harding ESE, Inc. April 2002

In addition to these major documents, there was also considerable review and commentary correspondence. While not an exhaustive list, recent items which either commented on findings of the Phase I report, or clarified locations and intent of 2002 field work include:

- June 19, 2002 - Phase I Commentary - U.S. EPA to Harding ESE
- June 24, 2002 - FAA Access Restrictions - Harding ESE to U.S. EPA
- July 5, 2002 - Proposed Phase II Field Activity - Harding ESE to U.S. EPA
- July 18, 2002 - MDEQ Review and Commentary of Proposed Phase II Activity - MDEQ to U.S. EPA
- July 18, 2002 - Commentary on Proposed Phase II Activity - U.S. EPA to Harding ESE
- July 31, 2002 - Clarification/Modification Phase II Activity - Harding ESE to U.S. EPA

INTERVIEW RECORD

Site Name: Roto-Finish **EPA ID No.:**

Subject: Maintenance - Groundwater Monitoring Well Network

Time: 10:30 **Date:** May 6, 2002
Type: ☐ Telephone ☐ Visit ☐ Other
Location of Visit: ☐ Incoming ☐ Outgoing

Contact Made By:

Name: Russell D. Hart Title: RPM Organization: U.S. EPA - Region 5 - Superfund

Individuals Contacted:

Call 1

Name: Scott B. Bell Title: Project Manager Organization: LTI Environmental Engineering
Telephone No: (734) 332-1200
Fax No: (734) 332-1212
Street Address: 501 Avis Drive
City, State, Zip: Ann Arbor, MI 48108

Call2
Name: Michael J. Hoffman Title: Senior Principal Environmental Engineer Organization: Harding ESE, Inc.
Telephone No: (309) 693-5777
Street Address: 8901 North Industrial Road
City, State, Zip: Peoria, Illinois 61615-1509

Summary Of Conversation

Call 1 - I called to inquire about O & M responsibility and duties for the site, which for a natural attenuation site involve mainly upkeep of the groundwater well monitoring network. LimnoTech had been responsible for the operation of the non-time critical response action involving the functioning of the two extraction wells and continues to file monthly reports. Mr. Bell reported that until last summer, their firm would have been responsible for O & M of the monitoring well network, including such tasks as checking well caps/locks and replacing as necessary should there be signs of vandalism, making repairs, arranging for well redevelopment in cases of clogging/biofouling, etc. But, with the cessation of extraction well operation in July 2001, his firm's "official" O & M duties ceased. He said he has been meaning to call Mike Hoffman of Harding ESE to get better resolution of this issue, and suggested I might talk with Mr. Hoffman.

Call 2 - Immediately talking with Mr. Bell, I called Mike Hoffman of Harding ESE, Inc. Harding ESE is the RD consultant for the PRP firm of ITW, and is trying to define plume boundary/core areas and eventually determine a biodegradation rate for the plume. In so doing, Harding ESE sampled existing wells plus installed several new wells beginning in August 2001. Harding ESE has the most recent experience in taking a look at the well network and

cap/lock security issues. I noted my previous call with LimnoTech, and asked if "official" well network O & M duties had been determined between the two consulting firms. Mr. Hoffman said he would have to talk with Mr. Bell to resolve the matter. I suggested I would call again in about 1-2 weeks to see if they had a chance to determine which firm(s) might assume particular well network maintenance duties.

INTERVIEW RECORD

Site Name: Roto-Finish **EPA ID No.:**

Subject: Municipal Well Quality in the Vicinity of the Roto-Finish Site

Time: 11:30 **Date:** May 23, 2002
Type: ☐ Telephone ☐ Visit ☐ Other
Location of Visit: ☐ Incoming ☐ Outgoing

Contact Made By:

Name: Russell D. Hart Title: RPM Organization: U.S. EPA - Region 5 - Superfund

Individuals Contacted:

Name: Thomas F. Murphy Title: Environmental Scientist Organization: U.S. EPA - Reg. 5
Safe Drinking Water Branch

Telephone No: (312) 886-9546
Street Address: 77 West Jackson Boulevard
City, State, Zip: Chicago, IL 60604

Summary Of Conversation

Mr. Murphy is the Safe Drinking Water contact for Michigan water supply. I explained that we are conducting the Five Year Review process for the Roto-Finish site, and that we need to make a determination concerning the remedy's protectiveness of human health and the environment. I reviewed site history briefly with Mr. Murphy, and noted leading VOCs found at the site. According to the 1997 ROD Figure 4, there are several Kalamazoo and Portage municipality water intake wells which could be downgradient from the Roto-Finish site located about 5000-6000 feet away. These are Kalamazoo intake wells Station 8, 18, and 13 - plus Portage intake wells "Portage Creek", and "Garden Lane #5". From the analytical reports that these municipalities may need to file due to the Safe Drinking Water Act, what can be said of any VOCs that may be detected in the municipal supply, and if possible, these wells in particular? Mr. Murphy indicated he would check with local municipal contacts for pertinent information about quality/potential VOCs in these water supplies. I requested a time around time, if possible, of about one month to incorporate such information.

INTERVIEW RECORD

Site Name: Roto-Finish **EPA ID No.:**

Subject: Maintenance - Groundwater Monitoring Well Network - Follow-up

Time: 4:45 **Date:** May 28, 2002
Type: ☐ Telephone ☐ Visit ☐ Other
Location of Visit: ☐ Incoming ☐ Outgoing

Contact Made By:

Name: Russell D. Hart Title: RPM Organization: U.S. EPA - Region 5 - Superfund

Individuals Contacted:

Name: Michael J. Hoffman Title: Senior Principal Environmental Engineer Organization: Harding ESE, Inc.
Telephone No: (309) 693-5777
Street Address: 8901 North Industrial Road
City, State, Zip: Peoria, Illinois 61615-1509

Summary Of Conversation

I had left a voice mail message with Mr. Hoffman, and he returned my phone call. This was in follow-up to my inquiry of May 6, as to which consultant would be handling groundwater monitoring well network maintenance duties on behalf of ITW at the Roto-Finish site. Mr. Hoffman indicated that his firm, Harding ESE, Inc., would be assuming this function. I noted that on receiving the Phase I RD report, this function seems more important. [In discussing site hydraulic conductivity, section 4.1 of the Phase I report indicates that for 6 of 8 wells transmissivity values derived from slug tests conducted in October 2001 were lower than values derived from earlier RI investigations. While some difference may be due to difference in aquifer volume evaluated, the Phase I report also noted the possibility of screen fouling as a contributing factor.] I mentioned this to Mr. Hoffman. He noted that as the RD progresses, and a portion of the overall monitoring network is selected to yield results on an on-going basis, that redevelopment/O & M would be an item considered. I asked that the agency be kept informed of developments in this area.

INTERVIEW RECORD

Site Name: Roto-Finish **EPA ID No.:**

Subject: Municipal Well Quality in the Vicinity of the Roto-Finish Site - Follow-up Call

Time: 9:40 **Date:** June 4, 2002
Type: ☐ Telephone ☐ Visit ☐ Other
Location of Visit: ☐ Incoming ☐ Outgoing

Contact Made By:

Name: Russell D. Hart Title: RPM Organization: U.S. EPA - Region 5 - Superfund

Individuals Contacted:

Name: Thomas F. Murphy Title: Environmental Scientist Organization: U.S. EPA - Reg. 5
Safe Drinking Water Branch

Telephone No: (312) 886-9546
Street Address: 77 West Jackson Boulevard
City, State, Zip: Chicago, IL 60604

Summary Of Conversation

Mr. Murphy called to say he had received some information concerning contaminant concentration at various municipal intake wells which could be downgradient of the Roto-Finish site. He will forward this information along. In taking an initial review of it, he noted that one of the wells, Kalamazoo intake #3, I believe, has been unused since 1993 because of higher arsenic levels at that location. Some wells have shown detection of brominated VOCs, which could be a by-product of disinfection/halogenation of the water supply. One well showed a toluene hit of less than a ppb. One item concerning the analyses of these wells is that some wells were analyzed quite recently, in 2001. Other results were from the mid to late 1990s. Hence, in reviewing the results we should consider areas where analysis has not been as recent. I believe it would be appropriate to discuss these results with MDEQ once received.

Site Inspection Checklist

I. SITE INFORMATION

Site name: Roto-Finish **Date of Inspection:** September 9-10, 2002
Location and Region: Portage, **MIEPA ID:** MID005340088
Agency, office, or company leading the five-year review: U.S. EPA - 5 **Weather/Temperature:** Highs of 85-90deg F; partly sunny; relatively humid

Remedy Includes: (Check all that apply)

☐ Landfill cover/containment
XXAccess controls
☐ Institutional controls
☐ Groundwater pump and treatment
☐ Surface water collection and treatment
XXMonitored natural attenuation
☐ Groundwater containment
☐ Vertical barrier walls
☐ Other_____

Attachments: ☐ Inspection team roster attached ☐ Site map attached

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

2. **Site-Specific Health and Safety Plan** XXReadily available XXUp to date ☐ N/A
☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☐ N/A
Remarks__PRP's consulting firm, Harding ESE, maintains a copy of site specific health and safety plan in the site field trailer.

7. **Groundwater Monitoring Records** ☐ Readily available ☐ Up to date ☐ N/A
Remarks__U.S. EPA and MDEQ are sent reports which summarize results of groundwater monitoring efforts. If such data are generated in conjunction with new well installation, boring logs and geochemical information are attached with such reports. These reports are sent to the reviewing agencies by consultants for the site PRP. Since the results are rather voluminous, only more recent field logs/daily records of geochemical data, etc., are actually available in the field. As a rule, more comprehensive report generation is expected.

10. **Daily Access/Security Logs** XXReadily available XXUp to date ☐ N/A
Remarks_All visitors to the site field trailer are asked to sign in and out. Upon review by the RPM, these records seemed well maintained by the consulting firm representing the PRP financing the remedy.

V. ACCESS AND INSTITUTIONAL CONTROLS ☐ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map XXGates secured ☐ N/A

Remarks_Fencing, topped with barbed wire strands, seemed in good condition on the former Roto-Finish plant site, now called Esco, Inc. Approximately half the older monitoring wells are contained within this fencing. The newest monitoring wells are on Kalamazoo/Battle Creek Airport property, to the west of the original plant site. Fencing around the airport perimeter appears very secure.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks__All visitors to airport property may only be allowed on after passage through a padlocked gate area on the east side of the airport. All such visitors must be accompanied by a representative who has taken the airport's security course.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map XXNo vandalism evident

Remarks_____

2. **Land use changes on site** ☐ N/A

Remarks__As noted, the old Roto-Finish property is now called Esco, Inc. This is a metal machining shop.

3. **Land use changes off site** ☐ N/A

Remarks_To the west and northwest, the presence of the airport limits opportunity for change. To the south of the site, there seems to have been significant development of new and/or expanded industrial plants, such as the Stryker facility. The pharmaceutical facilities about 3/4 mile south also had evidence of continuing construction.

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map XXRoads adequate ☐ N/A

Remarks__Perhaps noteworthy of remark is the relationship with the airport. For wells on the airport property, a perimeter gravel road is maintained. Seasonal grass cutting is also done, so all wells on airport property are flush to the ground. During winter, the airport does not snow plow the gravel road, so access during snowy weather is limited.

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

XXProperly secured/locked XXFunctioning XXRoutinely sampled XXGood condition
XXAll required wells located XXNeeds Maintenance ☐ N/A

Remarks All "stick-up" wells were appropriately capped, and the cap was locked. Keys, when sampling is necessary, are kept in the site field trailer located on the former Roto-Finish site. All flush-grade wells were bolted shut; bolt sizes were either 7/16 or 9/16". Originally, all wells had been marked. However, for wells within the Esco fence line, these had been given a new coat of paint recently, which pained over the former markings. While identity can be readily determined by consultants or reviewing agency personnel equipped with well maps, markings will be put on again in the near future. During the next round of current RD field work, scheduled to begin the week of September 16, all wells are to be sampled. As this sampling proceeds, the PRP's consultant indicated that they would put identifying markings on wells as needed.

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy basically consists of natural attenuation. Obviously for such a remedy, the Agency should have some assurance that the plume is well-defined and stable. Issues that arose during monitoring work done in the fall of 2001 indicated that *possibly* what had been a plume moving to the northwest may either have more radial flow characteristics, or may be pivoting around to the southwest in response to groundwater demand from that direction.

C.	**Early Indicators of Potential Remedy Problems**

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

_From the 2001 field work, the Agency cannot say with certainty exactly where the plume is. This year's field work should help in providing further definition. Taken to a more extreme case, if after a reasonable time to provide further definition, too much uncertainty still exists as to who might be a downgradient recipient of this plume, such that the Agency is sure that natural attenuation is truly protective of human health and the environment, then the Agency may need to modify the remedy and consider pumping and treating in what may now be revealed as the most concentrated portion of the plume of contamination

D.	**Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

_If, once results are tabulated for current field work , a stronger case can be made that Roto-Finish groundwater may be influenced by groundwater usage regimes by major industries to the south, then it would seem appropriate for the Agency and PRP's consultant to share results with industries located in that direction. It would seem to be in the interests of all parties to explore expected water usage patterns by such industr(ies), and examine further what might be anticipated in terms of possible water conservation measures, when and with what concentration contaminants from the Roto-Finish plume might arrive at such industries, and whether such industry may have existing groundwater treatment devices, such as stripping towers for internal usage, that might be compatible with Roto-Finish contaminants. If this were the case, it is conceivable that rather than demand that the Roto-Finish PRP expand and build capital facilities to cope with new movement of the plume, that perhaps the private parties might reach some mutually acceptable agreement calling for some form of reimbursement/O & M. Another possibility is that industrial entities to the south might be able to invoke water conservation measures which would allow the plume to revert to previously conceived flow patterns, which may be more compatible with natural attenuation.